भारतीय मानक IS 5428 (Part 2) : 2023

Indian Standard

गेज ग्लास — विशिष्टि

भाग 2 नलिकाकार गेज ग्लास हेतु संरक्षक ग्लास

(दूसरा पुनरीक्षण)

Gauge Glasses — Specification

Part 2 Protector Glasses for Tubular Gauge Glasses

(Second Revision)

ICS 17.040.30

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August 2023 **Price Group 4**

Chemical Engineering Plants and Related Equipment Sectional Committee MED 17

FOREWORD

This Indian Standard (Part 2) (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Chemical Engineering Plants and Related Equipment Sectional Committee had been approved by the Mechanical Engineering Divisional Council.

This standard was first published in 1969 in two parts and then revised in 1985. The present revision has been taken up with a view to incorporate the modification found necessary as a result of experience gained in the use of this standard. Also, in this revision, the standard has been brought into the latest style and format of Indian Standards, and references to Indian Standards, wherever applicable have been updated. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act,* 2016.

This standard on gauge glass, Part 2 Protector glasses for tubular gauge glasses is one of the series of standards on gauge glasses. Other parts of this standard are:

Part 1 Tubular glasses for level gauges
Part 3 Through-vision and reflex glasses
Part 4 Circular sight and light glasses
Part 5 Port gauge glasses as used in fittings for steam boilers

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GAUGE GLASSES — SPECIFICATION

PART 2 PROTECTOR GLASSES FOR TUBULAR GAUGE GLASSES

(Second Revision)

1 SCOPE

This standard (Part 2) covers the requirements for the protector glasses for use with tubular gauge glasses.

2 REFERENCES

The standard given below contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard given below.

IS No	*Title*
IS 5428 (Part 1) : 1985	Specification for gauge glasses: Part 1 Tubular glasses for level gauges (*first revision*)

3 DEFINITIONS

For the definitions of various terms used in the glass industry, refer to **2** of IS 5428 (Part 1).

4 MATERIAL

4.1 The glass of the protector glasses shall be toughened soda-lime or suitably treated borosilicate plate glass. It shall be transparent, perfectly flat on all surfaces, highly polished, free from flows, scratches, and any other defect that would interfere with its function or service. Armour plate glass of the splinter-proof type may also be used as an alternative provided it complies with the requirements of this standard. Annealed or chemically toughened glass shall not be used.

4.2 The following properties shall be decided between the purchaser and the manufacturer depending on working conditions and shall be specified along with requisitions.

a) Chemical resistance to water, acid and alkalies with some minimum limits;
b) Average coefficient of thermal expansion;
c) Chemical composition of glass; and
d) Tensile and bending strength at ambient and maximum operating temperature.

5 DIMENSIONS

5.1 The protector glasses shall preferably be (57 ± 0.5) mm wide and (12 ± 0.5) mm thick.

5.2 The length of protector glasses shall preferably be as specified below with a tolerance in each case of ± 0.8 mm.

Length, in mm — 150, 175, 190, 200, 230, 255, 280, 305, 330, 355, 370, 380, 405, 430, 455, 480, 505.

5.3 If specified in the purchase order, the protector glasses may be supplied in sets of three, having an overall tolerance on length of 0.4 mm, and being otherwise in accordance with above sizes given in **5.2**.

5.4 Glasses of other dimensions and tolerances are acceptable provided that they comply with the other requirements of this standard.

6 FINISH OF EDGES

The edges of protector glasses shall be bevelled in accordance with one of the designs shown in Fig. 1. The finish on edges and bevels shall be by agreement between the purchaser and the supplier.

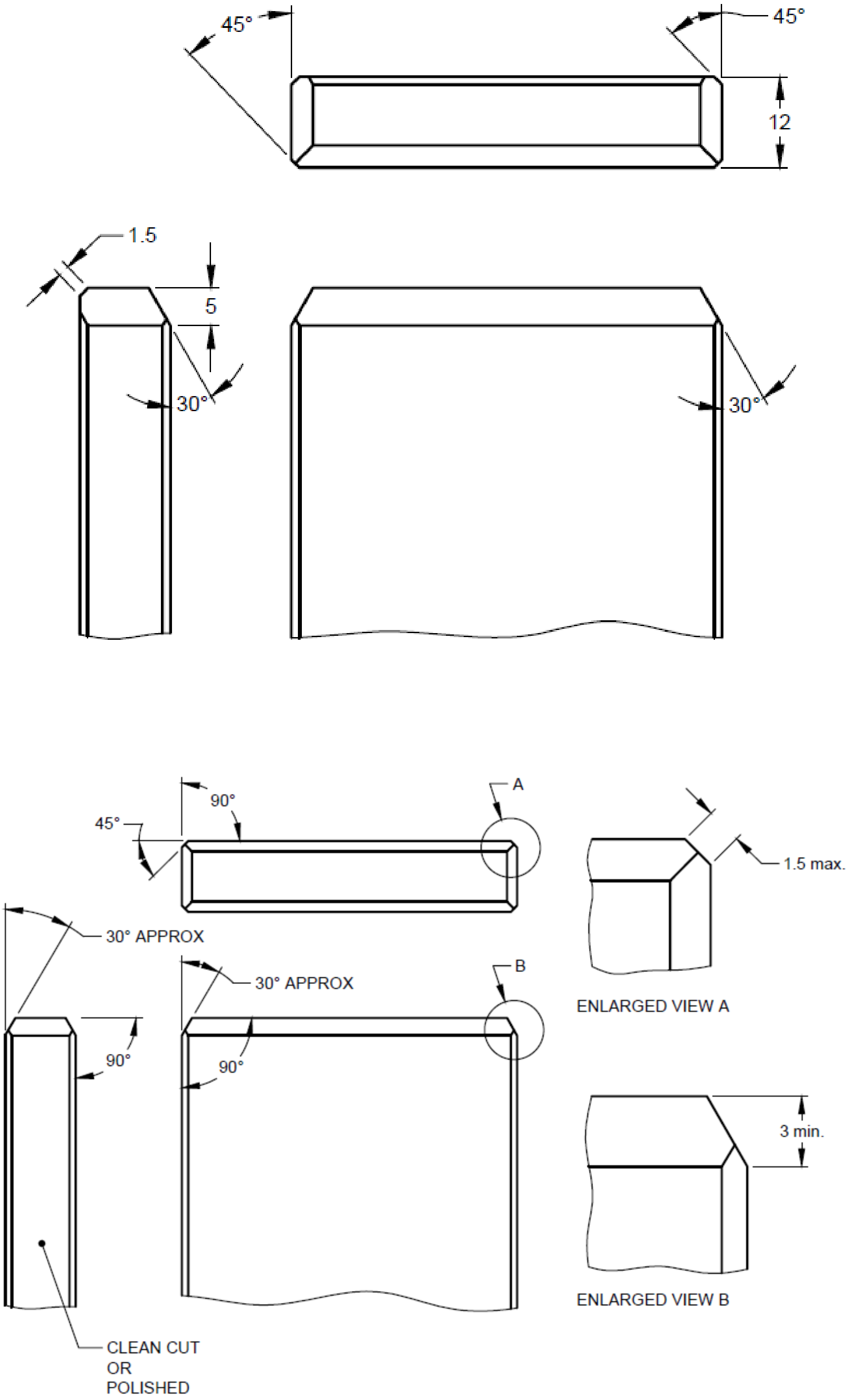
7 TESTS

7.1 Dimension Check

The protector glasses shall be checked for conformity to the specified dimensions.

7.2 Inspection Under Polarized Light

Each protector glass shall be examined under polarized light for adequacy of toughening. Any glass which does not show a polarization pattern indicative of toughening shall be rejected.



All dimensions in millimetres.

FIG. 1 DESIGNS FOR EDGES OF PROTECTOR GLASSES

7.3 Thermal Shock Requirement

Manufacturer shall certify that protector glasses shall pass the thermal shock test and acceptance conditions described in **8.4** of IS 5428 **(**Part 1). During testing, toughened glasses shall enter the water with an observation face parallel to the water surface.

7.4 Hydrostatic Test

The gauge assembly shall be hydrostat-tested at a minimum pressure of 1.5 × operating pressure × allowable stress of glass at ambient temperature/allowable stress of glass at operating temperature.

8 SAMPLING

8.1 2 percent of the glasses (but not less than 10 or more than 30 glasses) shall be taken by random selection from each consignment. If more than 10 percent but not more than 20 percent of the glasses in the sample fail the test, a further sample of 2 percent shall be taken by random selection from the consignment and subjected to a second test.

8.2 Glasses subjected to and passing the test may be put into service.

9 MARKING

9.1 The protector glasses shall be permanently marked with the following:

a) Manufacturer’s identification or trade-mark; and
b) Size of the protector glass.

9.2 BIS Certification Marking.

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

10 PACKING

The glasses shall be packed securely in suitable inner boxes, containing not more than 24 glasses and adequately cased for transit.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Chemical Engineering Plants and Related Equipment Sectional Committee, MED 17

Organization	*Representative(s)*
CSIR - Indian Institute of Petroleum, Dehradun	Dr Mritunjay Kumar Shukla **(*Chairperson*)**
Advance Valves Global, Noida	Shri Pranay S. Garg Shri Chandrakant Wadkar (*Alternate*)
Auma India Private Limited, Bengaluru	Shri Yashwant M. Jannu
Bharat Heavy Electrical Limited, New Delhi	Shri Y. Srinivasa Rao Shri Abhishek Kumar Pandey (*Alternate*)
Blast Carboblocks Private Limited, Mumbai	Shri Dhawal Saxena
Central Power Research Institute, Bengaluru	Dr P. Thomas Shri Sadasiva Murthy P. (*Alternate* I) Shri Ajith Kumar N. (*Alternate* II)
Chemtrols Industries Private Limited, New Delhi	Shri P. Krishna Kumar
Confederation of Indian Industry, New Delhi	Shri Dushyant Singh
Directorate General Factory Advice Service and Labour Institutes, Mumbai	Shri Tanoj Chandan Shri Kunal Sharma (*Alternate*)
Engineers India Limited, Gurugram	Shri Hasmukh K. Parmar Shri Mragang Sheakhar (*Alternate*)
GMM Pfaudler Limited, Anand	Shri Dhiran Panchal Shri Satvik Patel (*Alternate*)
Hindustan Petroleum Corporation Limited, Mumbai	Shri Krishanu Ghosh Shri N. K. Rai (*Alternate*)
Indian Oil Corporation Limited, New Delhi	Shri Karan Agrawal
Indian Rubber Manufacturers Research Association, Mumbai	Dr K. Raj Kumar Dr Debdipta Basu (*Alternate*)
Indian Valve and Actuator Manufacturers Association (IVAMA), Coimbatore	Shri R. Muruganantham Shri Jay Doshi (*Alternate*)
Kejriwal Casting Limited, Kolkata	Shri Sandeep Kejriwal
L&T Valves, Chennai	Shri Rohit Sharma Shri Suriyanarayanan (*Alternate*)
Lathia Rubber Manufacture Company Private Limited, Mumbai	Shri Sanjiv S. Lathia
MECON Limited, Ranchi	Shri Yogendra Kumar Singh Shri Arvind Bhushan (*Alternate*)

Organization	*Representative(s)*
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Project and Development India Limited, Noida	Shri Sanjiv Kumar Mishra Shri Rajeev Ranjan Kumar (*Alternate*)
Tata Consulting Engineers Limited, Navi Mumbai	Shri Shivnarayan Pareek Shri Shireesh S. Swami (*Alternate*)
BIS Directorate General	Shri Navindra Gautam Scientist 'E'/Director and Head (Mechanical Engineering) [Representing Director General (*Ex-officio*)]

Member Secretary
Ms Neha Thakur
Scientist 'B'/Assistant Director
(Mechanical Engineering), BIS

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This Indian Standard has been developed from Doc No.: MED 17 (19919).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi